REMARKS

The above amendment with the following remarks is submitted to be fully responsive to the Office Action of November 20, 2002. Reconsideration of this application in light of the amendment and the allowance of this application are respectfully requested.

Claims 1-80 were pending in the present application prior to the above amendment. In response to the Office Action, claims 1, 11, 13, 15, 28, 32, 41, and 68 are amended to correct clerical errors and to more clearly claim the invention. Therefore, claims 1-80 are now pending in the present application and are believed to be in proper condition for allowance.

Initially, Applicants note that the Office did not reject claims 1-5 and has included the standard paragraph regarding allowable subject matter. Applicants presume that the Office has allowed claims 1-5. If claims 1-5 are not allowed, Applicants respectfully request the Office state the rejection more clearly.

112 rejection

Referring now to the Office Action, claim 1-16 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Applicant notes that the "split transaction" of claims 1-16 is described in the specification on pages 60-64. The "split transaction" referred thereto is the transaction between a bus coupled to a device over a network, that is, a transaction split between the device and bus by the network, where the bus and device would normally be located immediately adjacent each other with no latency or delay. In the specification, a "split transaction" is described as follows:

> Most asynchronous IEEE-1394 transactions from a particular device are serialized in order to guarantee order of delivery and because IEEE-1394 is a bus, not a network (so transaction and wire delays are not an issue). This may cause problems when tunneling because the latencies involved in confirmation of an individual packet or completion of a split transaction across a network are very large. (Specification, p. 60, lines 16-22.)

Claim 1 is rejected for lack of antecedent basis in the limitations "a bus device" and "the device". Applicants have replaced "a device" in the preamble with "a bus device"; "a bus device" with "the bus device"; and "the device" with "the bus device". Claims 11, 13, and 15 are rejected for a clause that is unclear in meaning. Applicants have replaced "posting the write request on the interface by completing a split transaction immediately via a response generated by software and not placing the split transaction over the network and then sending the write request over the network" with "generating a write response to the write request before sending the write request to a network host." By the amendments made, Applicants believe these rejections are now overcome.

Rejections under Xu

Claims 11-17, 19, 21-23, 26-29, 31-32, 34-36, and 39-41 are rejected under 35 U.S.C. 102(e) as being anticipated by Xu et al., U.S. Patent No. 6,151,628 (Xu).

The Office states that Xu "discloses a method for connecting a source of digital data to a computer network in which a tunneling call acceptance procedure is taught." The Office further states that "Xu specifically teaches a write request (incoming call 100 and the access request 102), acknowledge complete (call accept), encapsulating the write request into packets with tunneling header (incoming call request with dialing number of the remote user, the telephone number dialed, and a subaddress 106), transmitting the packets over the network (IP packet transfer 128), and receiving a response that write request data has been delivered to a network host (access reply 104)". Applicants respectfully disagree.

Xu does not disclose or suggest "generating a write response to the write request before sending the write request to a network host" as recited in claim 11, "means for

receiving a write request from the device and generating a write response to the write request before sending the write request to a network host" as recited in claim 13, or "generating a write response to the write request before sending the write request to a network host" as recited in claim 15.

Xu does not disclose or suggest "the interface generating an acknowledge complete indication to indicate to the serial bus device that the transaction is complete" as recited in claim 17, "means for generating an acknowledge complete indication to indicate to the serial bus device that the transaction is complete" as recited in claim 23, or "generating an acknowledge complete indication to indicate to the serial bus device that the transaction is complete" as recited in claim 28.

Xu does not disclose or suggest "the interface immediately sending a serial bus write response to the serial bus device indicating that the transaction has been completed" as recited in claim 29, "means for immediately sending a serial bus write response to the serial bus device indicating that the transaction has been completed" as recited in claim 36, or "immediately sending a serial bus write response to the serial bus device indicating that the transaction has been completed" as recited in claim 41.

The Office's attention is respectfully directed to Figs. 6, 7, 10, and 11 in Xu which illustrate a telephone network that transmits a call accept upon receiving an access request for an incoming call. In Xu, a call is placed with several steps, where the process starts with an incoming call at step 100 (col. 11, lines 20-25). Next, at step 102, a first phase authorization routine with an authentication server is initiated (col. 11, lines 26-29). At step 104, the authentication server issues an Access-Reply message (col. 11, lines 41-48). At step 106, an Incoming-Call-Request message is sent to the tunneling server, and then, at step 108, an Incoming-Call-Reply message is sent, such as Connect if the result of the access inquiry is affirmative (col. 11, lines 50-57). At step 110, if the Connect message was received from the tunneling server, a call accept message is sent to the remote user, and an incoming call connect message is then relayed at step 112 to the tunneling server (col. 11, lines 59-64). It is possible that during the access authorization, the authentication server determines that the remote user is not authorized to access the designated network

served by the authentication server (col. 12, lines 26-32). When the authentication server determines that the remote user is not authorized, an Access-Reject message is sent from the authentication server (col. 12, lines 35-38).

The Office has compared Xu's call accept with Applicant's acknowledge complete indication. More specifically, the Office has compared Xu's call accept with "generating a write response to the write request before sending the write request to a network host", as is recited in claims 11, 13, and 15; with "generating an acknowledge complete indication to indicate to the serial bus device that the transaction is complete" as is recited in claims 17, 23, and 28; and with "immediately sending a serial bus write response to the serial bus device indicating that the transaction has been completed" as is recited in claims 29, 36 and 41.

However, Xu's call accept is a preliminary indication to the user that the user has passed a preliminary security point and is authorized to use the network. The call accept message is sent to a remote user following an initial access inquiry, and allows the remote user to continue to access the network (col. 11, lines 59-64).

In Applicant's "generating a write response to the write request before sending the write request to a network host", as is recited in claims 11, 13, and 15, the write response does not correspond to Xu's initial indication of authorization. Instead, the write response is generated, in the present invention, at a time before it would be generated by the bus device in an ordinary write process. In the present invention, the write response is generated before sending the write request to a network host, out of the ordinary order of a write process. In Applicant's "generating an acknowledge complete indication to indicate to the serial bus device that the transaction is complete" as is recited in claims 17, 23, and 28, the acknowledge complete indication does not correspond to Xu's initial indication of authorization. Instead, the acknowledge complete indication is generated, in the present invention, before sending the write request to the serial bus device. In an ordinary write process, the serial bus device only receives an indication that the transaction is complete at the end of a transaction, rather than before the end of the transaction, as in the present invention. In Applicant's "immediately sending a serial bus write response to the serial

bus device indicating that the transaction has been completed" as is recited in claims 29, 36 and 41, the serial bus write response does not correspond to Xu's initial indication of authorization. Instead, the serial bus write response is generated, in the present invention, before sending the write request to the network host, out of the ordinary order of a write process.

Similarly, the Office has compared Xu's access reply 104 with Applicant's receiving a response that write request data has been delivered to the network host. However, Xu's access reply 104 is merely an initial response from the authentication server that the user is authorized to access the network. The authentication server issues an Access-Reply message 104 upon receiving an incoming call, and then an Incoming-Call-Request message is sent to the tunneling server (col. 11, lines 20-57).

In Applicant's "receiving a response that write request data has been delivered to the network host", as is recited in claims 11, 13, 15, 17, 23, 38, 29, 36 and 41, the receiving step does not correspond to Xu's access reply 104. Instead, the receiving step is a final step where the interface receives a response similar to the write response or acknowledge complete indication that was previously generated and sent to the interface. This receiving step is an actual confirmation that the write request was received by the network host. Thus, Applicant's claimed invention allows a bus device to send a write request, receive a write request of acknowledge complete indication immediately, and then the write request is sent across the network to the network host, thereby allowing the device to continue to send data without waiting for the final confirmation indicating that the transaction is complete.

Because Xu does not teach each and every limitation of claims 11-17, 19, 21-23, 26-29, 31-32, 34-36, and 39-41, specifically, sending a write response or acknowledge complete response indicating that the entire transaction is complete, before the transaction is complete, thereby allowing the device to continue to send data without waiting for the final confirmation indicating that the transaction is complete, Applicants respectfully submit that Xu does not anticipate claims 11-17, 19, 21-23, 26-29, 31-32, 34-36, and 39-41. Accordingly, in view of the foregoing remarks, the Office is respectfully requested to

reconsider and withdraw the rejections of claims 11-17, 19, 21-23, 26-29, 31-32, 34-36, and 39-41.

The Office has rejected claims 18, 20, 24-25, 30, 33, 37, and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Xu in view of Gerszberg et al., U.S. Patent No. 6,480,748 (Gerszberg). The Office acknowledges that "Xu fails to teach IEEE 1394 devices". The Office then states that "Gerszberg teaches IEEE 1394 bus and devices used in conjunction with tunneling scheme used in access network. See Figs. 2, 5, 9, 14, and 15." The Office then asserts that "[i]t would have been obvious for one of ordinary skill in the art at the time of the invention to implement the teaching of Xu by adopting the IEEE 1394 devices as taught by Gerszberg since it was known to use IEEE device and bus for connecting to a network using tunneling scheme".

As above, Applicants respectfully submit that Xu does not teach, disclose or suggest each and every limitation of independent claims 17, 23, 29, and 36, from which dependent claims 18, 20, 24-25, 30, 33, 37, and 38 depend, specifically, sending a write response or acknowledge complete response indicating that the entire transaction is complete, before the transaction is complete, or receiving a response that write request data has been delivered to the network host.

Additionally, Applicants respectfully submit that Gerszberg also does not teach, disclose or suggest a write response or acknowledge complete indication indicating that the entire transaction is complete, before the transaction is complete, or receiving a response that write request data has been delivered to the network host, as is disclosed in independent claims 17, 23, 29, and 36, from which dependent claims 18, 20, 24-25, 30, 33, 37, and 38 depend.

The Office's attention is respectfully directed to Figs. 1A-1E, 2, and 6A-6B in Gerszberg, disclosing a voice and data network. The system of Gerszberg is directed to optimizing and increasing bandwidth in a voice and data network (see SUMMARY section). Gerszberg uses a telephone network including DSL, combined with data protocols including PPTP, firewire and USB, to optimize bandwidth in a high-volume traffic network. Gerszberg does not teach receiving a write response or acknowledge

complete indication generated by the interface, and does not teach receiving a response that write request data has been delivered to the network host, as is disclosed in independent claims 17, 23, 29, and 36, from which dependent claims 18, 20, 24-25, 30, 33, 37, and 38.

Because neither Xu nor Gerszberg teach, disclose or suggest a write response or acknowledge complete indication, or receiving a response that write request data has been delivered to the network host, as is disclosed in independent claims 17, 23, 29, and 36, from which dependent claims 18, 20, 24-25, 30, 33, 37, and 38; no combination of Xu and Gerszberg would have taught or suggested each and every limitation of claims 18, 20, 24-25, 30, 33, 37, and 38. Thus, Applicants respectfully submit that neither Xu nor Gerszberg, alone or in combination, renders claims 18, 20, 24-25, 30, 33, 37, and 38 unpatentable. Accordingly, in view of the foregoing remarks, the Office is respectfully requested to reconsider and withdraw the rejections of claims 18, 20, 24-25, 30, 33, 37, and 38.

Rejections under Chau

Claims 6, 7, 9, 10, 42, 45-49, 51-60, 62-72, 74-75, and 77-80 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chau et al., U.S. Patent No. 6,233,232 (Chau). The Office states that "Chau discloses architecture for connecting a plurality of telephone lines to a computer network. Specifically, Chau teaches a network (130), a bus (140, 142, 144), a bus device coupled to the bus (computer system 150, 152, 154), an interface (network access server 100, 110, 120) coupling the network to the bus, the interface tunneling bus events over the network to and from the bus device by encapsulating bus events generated by the bus device into packets and transferring the encapsulated bus events over the network for subsequent decapsulation to recreate the bus events. See col. 6, line 48-54, and col. 7, lines 47-49." The Office additionally states that "Chau fails to specifically teach sending an announcement packet over the network that encapsulates bus event corresponding to a bus reconfiguration process for the bus. However, Chau teaches establishing multilink connections through multiple network access servers. This process involves receiving request for multilink connection and allocating logical and physical

ports for connections establishment. See Fig. 13 and col. 13, lines 16-34. This process is a configuration in logical sense. Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to implement the connection establishment of Chau by sending bus configuration command. The Office further states that Chau "fails to teach a Universal Serial Bus (USB) device coupled to the bus. USB device is well known in the field of the invention as recognized by applicant in the present specification page 3. It refers to a device conforming to the Universal Serial Bus Standard. Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to implement Chau's system by specifically utilizing USB device as the bus device."

The Office's attention is respectfully directed to Figs. 1, 13, 14, 15, and 16 in Chau, disclosing a voice and data network. Chau is directed to a flexible telephone and data network that can be changed to accommodate different needs (see SUMMARY section). In Chau, multiple lines can be added while preserving a single system image, allowing bandwidth-on-demand by setting up and tearing down telephone lines as needed. Chau generally describes receiving information, packetizing the information, and sending the packets across the Internet (see col. 6, line 48- col. 7, line 50). However, Chau does not describe sending an indication or response that a transaction has been completed; capturing a bus event corresponding to a bus reconfiguration process and tunneling the bus event across a network; tunneling URB requests that are based on the captured bus events over the network; an interface buffering isochronous data to manage network latencies over the asynchronous network; using a data confirmation packet to determine whether to continue sending isochronous data; or encapsulating an ownership tunneling packet to manage network ownership of a bus device.

With respect to claims 6-7 and 9-10, which recite "sending an indication or response to the bus device that the transaction has been completed, and then encapsulating bus events generated by the bus device into packets and transferring the packets over the network", Applicants respectfully submit that Chau only generally refers to packetizing the information (col. 6, line 48- col. 7, line 50). There is no teaching or suggestion in Chau describing sending an indication or response that a transaction has been completed,

and then encapsulating bus events from the bus device into packets and sending them over the network.

With respect to claims 42, 45-49, and 51-54, which recite "the interface tunneling bus events over the network to and from the bus device by encapsulating bus events generated by the bus device into packets and transferring the encapsulated bus events over the network for subsequent decapsulation to recreate the bus events, and further wherein the interface sends an announcement packet over the network that encapsulates bus events corresponding to a bus reconfiguration process for the bus" and "capturing bus events corresponding to a bus configuration process generated on a bus; encapsulating the captured bus events into at least one packet associated with a network protocol using an interface; sending the at least one packet over the network so that the capsulated bus event may be decapsulated to recreate the bus events at a remote site" , Applicants respectfully submit that Chau only refers to allocating logical and physical ports upon a request (col. 13, lines 13-64). The Office states that "Chau teaches establishing multilink connections through multiple network access servers. This process involves receiving request for multilink connection and allocating logical and physical ports for connections establishment." The Office concludes that "[t]his process is a configuration in logical sense." However, Applicants respectfully submit that the multilink establishment of Chau is dissimilar from capturing a bus event corresponding to a bus reconfiguration process and tunneling the bus event across a network, as is disclosed in claims 42, 45-49, and 51-54. In the multilink establishment of Chau, the system receives a request for a multilink establishment, and then allocates physical ports to accommodate the request (col. 13, lines 16-34). However, the bus reconfiguration event of claims 42, 45-49, and 51-54 sends information about a bus reconfiguration event across the network in packet form, rather than requesting establishment of a multilink, as in Chau.

With respect to claims 55-57, the claims recite "the interface tunneling URB requests over the network to and from the bus device by encapsulating the URB requests into network protocols and transferring the encapsulated the URB requests over the network for subsequent decapsulation to recreate USB bus events" and "capturing bus events generated on a bus; encapsulating URB requests that are based on the captured bus

events into packets associated with a network protocol using an interface; and sending the encapsulated bus events for subsequent decapsulation at a remote site". Applicants respectfully submit that Chau only generally refers to packetizing the information (col. 6, line 48- col. 7, line 50). Chau does not teach tunneling URB requests that are based on the captured bus events over the network to and from the bus device.

With respect to claims58-60 and 62-65, the claims recite "an asynchronous network; a bus; a bus device coupled to the bus, wherein the bus device generates isochronous data; an interface coupling the network to the bus, the interface tunneling bus events over the network by encapsulating bus events into network protocols, transferring the encapsulated bus events over the network, and subsequently decapsulating the bus events to recreate the bus events, and further wherein the interface buffers isochronous data to manage network latencies". Claim 66 recites "capturing bus events; encapsulating the captured bus events into packets associated with a network protocol; and an interface decapsulating the capsulated bus event and recreating them at a remote site, including buffering isochronous data to manage network latencies". Applicants respectfully submit that Chau only generally refers to packetizing the information (col. 6, line 48- col. 7, line 50). Chau does not teach an interface tunneling bus events over the network by encapsulating bus events into network protocols such that the interface buffers isochronous data to manage network latencies over the asynchronous network. Similarly, Chau does not teach encapsulating the captured bus events into packets and buffering isochronous data to manage network latencies.

With respect to claims 67-68, the claims recite "the interface sending a data confirmation packet over the network after transmission of the bus events on a bus coupled to the interface; and the network host processing the data confirmation packet and determining whether to continue sending isochronous data" and "the interface and host coordinating to tunnel bus events over the network between the host and the bus device by encapsulating bus events into network protocols, transferring the encapsulated bus events over the network, and subsequently decapsulating the bus events to recreate the bus events, wherein the interface sends a data confirmation packet to the host after transmission on the bus of bus events representing isochronous data tunneled over the

network from the host, the host receiving the data confirmation packet and, based on its contents, determines whether to continue sending isochronous data". Applicants respectfully submit that Chau only generally refers to packetizing the information (col. 6, line 48- col. 7, line 50). Chau does not teach an interface sending a data confirmation packet after transmission of bus events, and using the data confirmation packet to determine whether to continue sending isochronous data.

With respect to claims 69-72, 74-75, and 77-80, the claims recite "encapsulating the captured bus events into packets associated with a network protocol, where at least one of the packets comprises an ownership tunneling packet to manage network ownership of a bus device" and "means for encapsulating the captured bus events into packets associated with a network protocol using an interface, where at least one of the packets comprises an ownership tunneling packet to manage network ownership of a bus device". Applicants respectfully submit that Chau only generally refers to packetizing the information (col. 6, line 48- col. 7, line 50). Chau does not teach encapsulating the captured bus events into packets associated with a network protocol using an interface, where at least one of the packets comprises an ownership tunneling packet to manage network ownership of a bus device.

Because Chau does not teach, disclose or suggest each and every element of claims 6-7, 9-10, 42, 45-49, 51-60, 62-72, 74-75, and 77-80, Applicants respectfully submit that Chau does not render claims 6-7, 9-10, 42, 45-49, 51-60, 62-72, 74-75, and 77-80 unpatentable. Accordingly, in view of the foregoing remarks, the Office is respectfully requested to reconsider and withdraw the rejections of claims 6-7, 9-10, 42, 45-49, 51-60, 62-72, 74-75, and 77-80.

Claims 8, 44, 50, 61, 73, and 76 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chau in view of Gerszberg. The Office states that "Chau fails to specifically teach IEEE 1394 bus. Gerszberg teaches IEEE 1394 bus and devices used in conjunction with tunneling scheme used in access network. See Figs. 2, 5, 9, 14 and 15. It would have been obvious for one of ordinary skill in the art at the time of the invention

to implement the teaching of Chau by adopting IEEE 1394 devices of Gerszberg since it is well known in Gerszberg to utilize IEEE 1394 devices in tunneling scheme.

As argued above, neither Chau nor Gerszberg teach or suggest each and every element of the independent claims 6, 42, 48, 58, 69, or 76, from which claims 8, 44, 50, 61, 73, and 76 depend. Because neither Chau nor Gerszberg teach, disclose or suggest each and every element of claims 8, 44, 50, 61, 73, and 76; no combination of Chau and Gerszberg would have taught or suggested each and every limitation of claims 8, 44, 50, 61, 73, and 76. Thus, Applicants respectfully submit that neither Chau nor Gerszberg, alone or in combination, renders claims 8, 44, 50, 61, 73, and 76 unpatentable. Accordingly, in view of the foregoing remarks, the Office is respectfully requested to reconsider and withdraw the rejections of claims 8, 44, 50, 61, 73, and 76.

Conclusion

In view of the foregoing, it is submitted that the present application is in condition for allowance and a notice to that effect is respectfully requested. However, if any issue remains after considering this response, the Office is invited to call the undersigned to expedite the prosecution and work out any such issue by telephone.

Respectfully submitted,

Jessica M. Egner
Registration No. 51,646

NIXON PEABODY LLP
401 9th Street, N.W., Suite 900
Washington, D.C. 20004-2128
(202) 585-8000
(202) 585-8080 (Fax)
Customer No. 22204

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